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12/9/7

DIALOG(R) File 2:INSPEC

05762265 INSPEC Abstract Number: A9420-6160-033

Title: Synthesis, structure, and reactivity of novel lanthanum tungstates

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Treatment: Experimental (X)

Abstract: Two new compounds, $\text{La}_{2/3}\text{W}_{1/3}\text{O}_{12}$ and $\text{LaFeW}_{1/3}\text{O}_{12}$, were prepared from $\text{La}_{2/3}\text{W}_{1/3}\text{O}_{12}$ and WO_3 or from $\text{Fe}_{2/3}\text{O}_3$, $\text{La}_{2/3}\text{O}_3$, and WO_3 . $\text{La}_{2/3}\text{W}_{1/3}\text{O}_{12}$ has a structure which can be considered as a distorted superstructure of the scheelite structure CaWO_4 in which 1/3 of the Ca sites are vacant. It is monoclinic, with space group $\text{C}2/c$ and $a=7.873(2)$ AA, and $\beta=109.25(3)$ degrees. $\text{LaFeW}_{1/3}\text{O}_{12}$ is triclinic with $a=7.569(3)$ AA, $b=7.537(2)$ AA, $\alpha=90.13(4)$ degrees, and $\gamma=98.90(3)$ degrees, and the structure consists of two distinct layers, one of which is a **La tungstate** which consists of a sheet of La in eight coordination and a sheet of edge-sharing FeO_6 octahedra sandwiched between two sheets of edge-connected WO_6 octahedra. The reactivity of these compounds with H_2 was investigated by TGA. $\text{La}_{2/3}\text{W}_{1/3}\text{O}_{12}$ is reduced at 1100 degrees C to yield a mixture of $\text{La}_{2/3}\text{O}_3$ and **W** metal. The products of the reduction of $\text{LaFeW}_{1/3}\text{O}_{12}$ were found to depend on the composition of the atmosphere. In N_2 with 5% H_2 the compound yields a complex mixture of $\text{La}_{2/3}\text{O}_3$, WO_3 , compounds with **W** and a **W-Fe** alloy, while in 100% H_2 , $\text{La}_{2/3}\text{O}_3$, **W**, and the alloys Fe_6W_7 or $\text{Fe}_{2/3}\text{W}_{1/3}$ are formed. (15 Refs)

Identifiers: $\text{La}_{2/3}\text{W}_{1/3}\text{O}_{12}$; $\text{LaFeW}_{1/3}\text{O}_{12}$; distorted superstructure; scheelite structure; monoclinic; space group; edge-sharing FeO_6 octahedra; reactivity; TGA; reduction

Chemical Indexing:

$\text{La}_{2/3}\text{W}_{1/3}\text{O}_{12}$ ss - $\text{La}_{2/3}$ ss - O_{12} ss - La ss - $\text{W}_{1/3}$ ss - O ss - **W** ss (Elements - 3)

$\text{LaFeW}_{1/3}\text{O}_{12}$ ss - O_{12} ss - **Fe** ss - **La** ss - $\text{W}_{1/3}$ ss - O ss - **W** ss (Elements - 4)

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24aug06 14:39:18 User259284 Session D3752.2

File 2:INSPEC 1898-2006/Aug W2
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Set	Items	Description
S1	1	CI=(W SS(S)O SS(S)FE SS(S)PR SS) (S)NE=5
S2	5	CI=(W SS(S)O SS(S)FE SS(S)LA SS) (S)NE=5
S3	5	S1:S2
S4	579	CI=(O SS(S)FE SS(S)LA SS) (S)NE=4
S5	61	CI=(O SS(S)FE SS(S)PR SS) (S)NE=4
S6	622	S4:S5
S7	9	S6 AND TUNGST??????
S8	0	S6 AND CI=W DOP
S9	9	S6 AND CI=W
S10	13	S6 AND W
S11	16	S7:S10 NOT S3
S12	9	S11 NOT S11/2003-2006

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FILE 'HCAPLUS' ENTERED AT 15:08:09 ON 24 AUG 2006

E US20050229676/PN

E 2003WO-US25481/PRN,AP

E MOSELEY P/AU, IN

L1 113 SEA ABB=ON PLU=ON "MOSELEY P"/AU OR ("MOSELEY P T"/AU OR
"MOSELEY P T"/IN)

L2 60 SEA ABB=ON PLU=ON ("MOSELEY PAT"/AU OR "MOSELEY PAT T"/AU OR
"MOSELEY PATRICK"/AU OR "MOSELEY PATRICK T"/AU OR "MOSELEY
PATRICK T"/IN OR "MOSELEY PATRICK TIMOTHY"/AU OR "MOSELEY
PATRICK TIMOTHY"/IN OR "MOSELEY PATRICK T"/AU)

L3 171 SEA ABB=ON PLU=ON (L1 OR L2)
E ATMOSPHERIC SENSORS/PA,CS

L4 36987 SEA ABB=ON PLU=ON PEROVSKIT?

L5 2 SEA ABB=ON PLU=ON L3 AND L4

L6 SEL PLU=ON L5 1- RN : 6 TERMS

L7 612930 SEA ABB=ON PLU=ON L6

L8 1 SEA ABB=ON PLU=ON L5 AND L7

D ALL HITSTR TOT

FILE 'STNGUIDE' ENTERED AT 15:10:45 ON 24 AUG 2006

FILE 'HCAPLUS' ENTERED AT 15:11:30 ON 24 AUG 2006

L9 1 SEA ABB=ON PLU=ON L5 NOT L8

D ALL

FILE 'STNGUIDE' ENTERED AT 15:11:37 ON 24 AUG 2006

FILE 'REGISTRY' ENTERED AT 15:13:05 ON 24 AUG 2006

L10 77632 SEA ABB=ON PLU=ON W/ELS,MAC AND O/ELS,MAC

L11 4990 SEA ABB=ON PLU=ON L10 AND FE/ELS,MAC

L12 1376 SEA ABB=ON PLU=ON L10 AND LA/ELS,MAC

L13 349 SEA ABB=ON PLU=ON L10 AND PR/ELS,MAC

L14 228 SEA ABB=ON PLU=ON W/MF OR TUNGSTEN/CN

L15 5463 SEA ABB=ON PLU=ON FE/ELS,MAC AND O/ELS,MAC AND (LA/ELS,MAC
OR PR/ELS,MAC)

L16 4621 SEA ABB=ON PLU=ON FE/ELS,MAC AND O/ELS,MAC AND LA/ELS,MAC

L17 889 SEA ABB=ON PLU=ON FE/ELS,MAC AND O/ELS,MAC AND PR/ELS,MAC

FILE 'HCAPLUS' ENTERED AT 15:16:10 ON 24 AUG 2006

L18 815 SEA ABB=ON PLU=ON L16(L) PEROVSKIT?

FILE 'HCAPLUS' ENTERED AT 15:16:20 ON 24 AUG 2006

L19 52 SEA ABB=ON PLU=ON L17(L) PEROVSKIT?

L20 330 SEA ABB=ON PLU=ON L10(L) PEROVSKIT?

L21 97 SEA ABB=ON PLU=ON L11(L) PEROVSKIT?

L22 38 SEA ABB=ON PLU=ON L12(L) PEROVSKIT?

L23 1 SEA ABB=ON PLU=ON L13(L) PEROVSKIT?

L24 5 SEA ABB=ON PLU=ON L21 AND L22

L25 827 SEA ABB=ON PLU=ON L18 OR L19

L26 14 SEA ABB=ON PLU=ON L25 AND L10

L27 7 SEA ABB=ON PLU=ON L25 AND L11

L28 14 SEA ABB=ON PLU=ON (L18 OR L19) AND L10

L29 3 SEA ABB=ON PLU=ON (L18 OR L19) AND L14

L30 12 SEA ABB=ON PLU=ON (L18 OR L19) AND TUNGSTEN

L31 12 SEA ABB=ON PLU=ON (L18 OR L19) AND TUNGST#####

L32 16 SEA ABB=ON PLU=ON (L18 OR L19) AND W

L33 0 SEA ABB=ON PLU=ON (L18 OR L19) AND W0

L34 0 SEA ABB=ON PLU=ON (L18 OR L19) AND W1

L35 0 SEA ABB=ON PLU=ON (L18 OR L19) AND WX

L36 0 SEA ABB=ON PLU=ON (L18 OR L19) AND WY

L37 2 SEA ABB=ON PLU=ON (L18 OR L19) AND W03

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L38 0 SEA ABB=ON PLU=ON (L18 OR L19) AND 1WO3
L39 0 SEA ABB=ON PLU=ON (L18 OR L19) AND 0WO3
L40 0 SEA ABB=ON PLU=ON (L18 OR L19) AND XWO3
L41 0 SEA ABB=ON PLU=ON (L18 OR L19) AND YWO3

FILE 'STNGUIDE' ENTERED AT 15:21:45 ON 24 AUG 2006

FILE 'REGISTRY' ENTERED AT 15:22:27 ON 24 AUG 2006

L42 75 SEA ABB=ON PLU=ON L11 AND L12
L43 12 SEA ABB=ON PLU=ON L11 AND L13
L44 87 SEA ABB=ON PLU=ON (L42 OR L43)

FILE 'HCAPLUS' ENTERED AT 15:26:50 ON 24 AUG 2006

L53 13 SEA ABB=ON PLU=ON L44 AND (?STOICHIOMET? OR RATIO OR
PROPORTION? OR FRACTION OR PERCENT? OR PER OR CENT OR WT OR
WEIGHT)
L54 28 SEA ABB=ON PLU=ON L44 AND 5
L55 9 SEA ABB=ON PLU=ON L44 AND 05
L56 0 SEA ABB=ON PLU=ON L44 AND 95
L57 0 SEA ABB=ON PLU=ON L44 AND W0
L58 0 SEA ABB=ON PLU=ON L44 AND W1
L59 0 SEA ABB=ON PLU=ON L44 AND 95W
L60 33 SEA ABB=ON PLU=ON (L53 OR L54)
L61 5 SEA ABB=ON PLU=ON L44 AND PEROVSK?

L62 9 SEA ABB=ON PLU=ON L44 AND TUNGSTAT?
L63 40 SEA ABB=ON PLU=ON (L60 OR L61 OR L62)
D BIB AB IT HITSTR TOT

FILE 'STNGUIDE' ENTERED AT 15:30:28 ON 24 AUG 2006

FILE 'HCAPLUS' ENTERED AT 15:33:26 ON 24 AUG 2006

L64 0 SEA ABB=ON PLU=ON (L17 OR L17) (L) PEROVSKIT? AND (L10 OR
L14 (L) MOA/RL)

FILE 'HCAPLUS' ENTERED AT 15:34:03 ON 24 AUG 2006

L65 3 SEA ABB=ON PLU=ON (L17 OR L17) AND PEROVSKIT? AND (L10 OR
L14 (L) MOA/RL)
D ALL HITSTR TOT

FILE 'STNGUIDE' ENTERED AT 15:34:35 ON 24 AUG 2006

FILE 'WPIX' ENTERED AT 15:35:49 ON 24 AUG 2006

FILE 'WPIX' ENTERED AT 15:35:54 ON 24 AUG 2006
E 20050229676/PN

FILE 'WPIX' ENTERED AT 15:36:02 ON 24 AUG 2006
E US20050229676/PN

L66 1 SEA ABB=ON PLU=ON US2005229676/PN
D MAX
L67 SEL PLU=ON L66 1- PN : 4 TERMS

FILE 'HCAPLUS' ENTERED AT 15:36:49 ON 24 AUG 2006

L68 612930 SEA ABB=ON PLU=ON L6
L69 0 SEA ABB=ON PLU=ON L67
E US 2002-402948P/PRN,AP